AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A magnetic navigation system for orienting a magnetically responsive device in an operating region in a subject, the system comprising:

at least two magnet units, each magnet unit comprising a magnet and a positioner for selectively changing the position of the magnet to orient the magnetically responsive device;

a support for mounting the at least two magnet units for movement relative to the subject, the support supporting the at least two magnet units adjacent the operating region in the subject at locations to apply a magnetic field to the operating region;

a control for operating the positioners of each magnet unit to selectively change the positions of the magnets to maintain the magnetic field direction applied to the operating region and to the magnetically responsive device by the magnets while the locations of the magnet units relative to the operating region change.

2. (original) The magnetic navigation system according to claim 1 wherein there are two magnet units adjacent the operating region on opposite sides of the operating region.

3. (previously presented) A magnetic navigation system for orienting a magnetically responsive device in an operating region in a subject, the system comprising:

at least two magnet units, each magnet unit comprising a magnet and a positioner for selectively changing the position of the magnet;

a support for mounting the at least two magnet units for movement relative to the subject, the support supporting the at least two magnet units adjacent the operating region in the subject at locations to apply a magnetic field to the operating region;

a control for operating the positioners of each magnet unit to selectively change the positions of the magnets to apply a magnetic field in a selected direction to the operating region to orient the magnetically responsive device.

4. (original) The magnetic navigation system according to claim 3 wherein there are two magnet units adjacent the operating region on opposite sides of the operating region.

5. (previously presented) A magnetic navigation system for orienting a magnetically responsive device in an operating region in a subject, the system comprising:

at least two magnet units, each magnet unit comprising a magnet and a positioner for selectively changing the position of the magnet;

a support for mounting the at least two magnet units for movement relative to the subject, the support supporting the at least two magnet units on opposite sides of the operating region in the subject at locations to apply a magnetic field to the operating region;

a control for operating the positioners of each magnet unit to selectively change the positions of the magnets to apply a magnetic field to a magnetically responsive device in the operating region based upon an input of a desired direction from the user and the strength of the field that is applied by the magnets to the operating region.

6. (previously presented) A magnetic navigation system for orienting a magnetically responsive device in an operating region in a subject, the system comprising:

at least two magnet units disposed on opposite sides of the operating region and moveably mounted for coordinated movement about the operating region, each magnet unit comprising a magnet, and a positioner for changing the position of the magnet in the unit to change the net direction of the field while the field is applied by the at least two units to the operating region.

7. (original) The magnetic navigation system according to claim 6 wherein there are two magnet units, and wherein the magnet units are rotatable about the operating region in a transverse plane of the subject.

8. (original) The magnetic navigation system according to claim 6 further comprising a controller for controlling the positioners of each of the magnet units to change the positions of the magnets as the magnet units move to maintain the magnetic field direction.

9. (original) The magnetic navigation system according to claim 6 further comprising a controller for controlling the positioners of each of the magnet units in response to a user-input selected direction to apply a magnetic field in the operating region to cause the magnetically responsive device to orient substantially in the selected direction.

10. (original) The magnetic navigation system according to claim 9 wherein the controller controls the positioners in response to the user-input selected direction and the strength of the field in the operating region.

11. (original) The magnetic navigation system according to claim 10 wherein the controller controls the positioners in response to movement of the magnet units, to apply a field whose direction is determined based upon a user-selected direction and the strength of the field in the operation region.

12. (previously presented) A system for controlling a magnetically responsive medical device in the body, the system comprising:

a subject support;

two magnet units, each magnet unit comprising a magnet, a positioner that permits the controlled rotation of the magnet about a first axis, and the controlled pivoting of the magnet about a second axis, to change a magnetic field of the magnets to control the medical device;

a support for mounting the magnet units on opposite sides of the subject support to apply the magnetic field to an operating region in the body on the subject support, the

support permitting the controlled rotation of the units about the patient support, while retaining the units in opposed relation.

13. (original) The system according to claim 12 wherein the support is generally arcuate and mounts the magnet units for arcuate movement in a plane generally transverse to the longitudinal axis of the subject support.

14. (original) The system according to claim 13 wherein the support comprises first and second stanchions disposed on opposite sides of the patient support, each stanchion having an arcuate track, and mounting one of the units for coordinated movement about an arcuate path, so that the units remain opposite one another.

15. (original) The system according to claim 12 wherein the first axes of the magnet units are parallel.

16. (original) The system according to claim 15 wherein the first axes of the magnet units are collinear and extend through the operating region.

17. (previously presented) A system for controlling a magnetically responsive medical device in an operating region in a subject's body, the system comprising:

a subject support;

a pair of opposed magnets mounted, each mounted for rotation about a first axis, pivoting about a second axis, and together mounted for rotation about the patient support to provide a magnetic field selectively changeable to control the device.

18. (previously presented) A system for controlling a magnetically responsive medical device in an operating region in a subjects body, the system comprising:

a subject support;

two magnet units, each unit comprising a magnet and a controllable positioner for rotating the magnet about a first axis, and pivoting the magnet about a second axis;

a support for mounting the magnet units on opposite sides of the operating region in a subject on the support, and allowing the units to move in a generally arcuate path about the operating region.

19. (previously presented) A method of controlling magnets in two magnet units disposed on opposite sides of a subject on a support, the units including a magnet and a positioner for rotating the magnet about a first axis and pivoting the magnet about a second axis, the units being movable mounted on the support for movement about the subject, the method comprising selectively rotating and pivoting each magnet to maintain the magnetic field direction projected by the moving magnets as the units move on the support about an operating region of the subject to selectively orient a magnetically responsive medical device.

20. (original) The method according to claim 19 further comprising coordinating the movement of the magnet units with an imaging system to avoid positional interference between the imaging system and the magnet units.

21. (previously presented) The method according to claim 19 further comprising adjusting the positions of the magnets in the magnet units while moving the magnet units to accommodate movements of an imaging system to maintain the desired orientation of the medical device.

22. (original) The method according to claim 19 wherein the positions of the magnets are adjusted as the magnet units move to change the direction of the magnetic field applied by the magnet units to maintain the device in substantially the selected direction despite changes in the distance between the magnet units and the operating region.

23. (original) The method according to claim 22 wherein the direction of the magnetic field applied by the magnet units is determined based upon a mathematical model.

24. (original) The method according to claim 22 wherein the direction of the magnetic field applied by the magnet units is determined based upon a lookup table.

25. (previously presented) A system for magnetically navigating a magnetically responsive device in an operating region in a subject, the system comprising two magnet units, each unit comprising a magnet and a positioner for selectively changing the orientation of the magnet to navigate the device; a support mounting the units on opposite sides of the operating region for coordinated movement about the operating region.

26. (original) The system according to claim 25 further comprising an imaging system for imaging the operating, region, the imaging system comprising a movable support, an imaging beam source, and an imaging beam receiver mounted on the support on opposite sides of the operating region, and further comprising a controller for coordinating the movement of the movable support and the magnet units to prevent interference.

27. (previously presented) The system of claim 17 wherein each of the opposed magnets is mounted for translation along one of the axes.